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# Culture-Related Topic Selection in Small Talk Conversations across Germany and Japan

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**Abstract.** Small talk can be used in order to build a positive relationship towards a virtual character. However the choice of topics in a conversation can be dependent on social background. In this paper, we explore culture-related differences in small talk for the German and Japanese cultures. Based on findings from the literature and verified by a corpus analysis, we integrated prototypical German and Japanese small talk conversations into a multiagent system. In evaluation studies conducted in the two target cultures, we investigated whether participants prefer agent dialogs that were designed to reflect their own cultural background.

**Keywords:** Virtual Agents, Culture, Small Talk, Topic Selection.

## 1 Motivation

Virtual characters are used in a vast variety of applications such as personal companions, training partners, teachers, sales assistants or for entertainment purposes. However all of these fields have a common need: virtual character behavior that is as natural and consistent as possible. Culture as a social background that influences human behavior can be used in order to enrich the behavior models of virtual characters.

For most types of applications mentioned above it is beneficial that a positive relation is established between the user and the virtual character. According to Reeves and Nass [1] users do establish social relations to computer-based systems and Bickmore and Cassell [2] use casual small talk in order to develop trust and rapport toward a virtual agent. Thus, in applications where the development of social relations is intended, small talk can be a part of the system's social intelligence.

H. Högni Vilhjálmsson et al. (Eds.): IVA 2011, LNAI 6895, pp. 1–13, 2011.

In [3], Cavazza and colleagues describe a companion ECA whose primary purpose is to hold conversations with the user. In their demonstration, the user's day at work is discussed while the virtual character responds by giving comfort, warnings or advice. Through this non-task oriented conversation about an everyday life domain that carries affective content, a social relation between the user and the virtual character is established.

However, the usage of small talk can vary with cultural background. In particular, the choice of topics occurring in casual small talk can be culture-dependent. In typical small talk conversations, so-called safe topics occur usually. According to Isbister et al. [4], the categorization into safe and unsafe topics varies with cultural background. Consequently, a topic (such as talking about family members) can be considered as being safe in one culture and as unsafe in another.

In the work described in this paper, we integrated culture-related topic selection into the conversational behavior of virtual characters. We expect that the choice of topics is dependent on cultural background. We therefore present a literature research as well as a corpus analysis that suggest how topics are prototypically distributed in German and Japanese small talk conversations. These findings were integrated in agent conversations. In evaluation studies that were conducted in the two target cultures, we investigated whether culture-related topic selection in the small talk behavior of virtual characters has an influence on the perception of observers with different cultural backgrounds. Therefore virtual characters have been used that resemble the cultural background of the study participants. The work described in this paper builds upon our previous work, where we presented a preliminary analysis of parts of the corpus as well as a preliminary evaluation study in one of the target cultures [5].

## 2 Related Work

Integrating culture as a social background that influences the behavior of virtual characters has been investigated in many systems lately. Language itself is the most obvious barrier when people from different cultures want to communicate. An example application that focuses on different languages includes the Tactical Language and Culture Training Systems by Johnson and Valente [6]. In order to complete the tasks provided by the system, users have to learn a foreign language. In addition to a speech-based interface, the system offers menus to select appropriate culture-specific gestures.

Non-verbal behavior is managed much more subconsciously than language but is influenced by cultural background as well. Differences in non-verbal behavior have been integrated in the behavior models of virtual characters in many systems so far, while several aspects of non-verbal behavior such as facial expressions, gesture selection, expressivity, spatial behavior or gaze have been considered [7], [8], [9], [10]. Besides the usage of different language or non-verbal behaviors, culture can manifest itself in a variety of behavioral routines. Some systems integrate culture by focusing on behavioral patterns that are typical for a given cultural background. Thereby rituals and different politeness or negotiation strategies have been taken into account [11], [12], [13].

While the approaches mentioned above rather focus on *how* things should be communicated in a culturally appropriate manner, the aim of our work is to investigate *what* should be communicated. An approach that takes different topics into account in order to simulate differences in cultural background is presented by Yin et al. [14]. For their study, two different virtual characters were designed, one representing a member of the Anglo-American culture and one resembling a member of the Latino culture. In addition, the appearance of the flat in the background as well as the music playing was adapted to match the cultural background of the agents. In their conversations with the user, the agents use different ways of argumentation. While the Anglo-American agent focuses on the interlocutor's well-being, the Latino agent shows interest in the participant's family and friends. However, in their evaluation study it is not clear which of the integrated aspects (appearance, language, way of argumentation) actually influenced the perceptions. Thus, for the work described in this paper, we concentrate on topic selection as the only variable in prototypical German and Japanese small talk conversations.

## 3 Background

In order to integrate culture-related differences into the small talk behavior of virtual characters, we first need to further explore the concept of small talk as well as tendencies that are described in the literature about different conversational behavior across cultures. In the following subsection, we categorize topics that are likely to occur in casual small talk conversations and state our expectations about culture-related differences for the German and Japanese cultures. Then we describe a corpus analysis in the two target cultures in order to ground our expectations into empirical data and get a statistical description of the observed behavior.

### 3.1 Small Talk and Culture-Related Differences

Small talk is often defined as a neutral, non-task-oriented style of conversation about safe topics, where no specific goals need to be achieved. However, it can serve different purposes, such as establishing social relations, getting acquainted with a conversation partner or avoiding undesirable silence. Although small talk is often smiled at and rules seem to be loose, it has been studied in the social sciences. Schneider [15], for example, describes a prototypical sequence of an average small talk conversation as follows: (1) question, (2) answer (3) reverse question / understanding / acknowledgment / evaluation (4) zero or more idle-moves, while step three and four can be performed several times. According to Schneider [15], this prototypical sequence can be restarted for every new topic.

Besides defining this prototypical sequence within a small talk conversation, Schneider [15] categorizes topics that might occur:

- Topics covering the *immediate situation* are elements of the so-called "frame" of the situation. The frame of a small talk conversation at a party, for example, holds topics such as the drinks, music, location or guests.

- The second category, the *external situation* or "supersituation" includes the larger context of the immediate situation such as the latest news, politics, sports, movies or celebrities. According to Schneider [15], this category is the least limited and can easily be extended.
- Within the *communication situation* topics concentrate on the conversation partners. Thus, personal things such as hobbies, family or career are part of this category.

According to Schneider [15], a typical small talk conversation begins with the immediate situation and shifts to either the external situation or to the communication situation afterwards. Whether the conversation addresses more likely the external situation or to the communication situation is dependent on the social surrounding. While shifting to social topics is more common in a social context, such as a party situation, shifting to personal topics is typical for a conversation between strangers that want to avoid silence. However, Schneider [15] only considered Western cultures in his studies and does not have a look at different topic selection in different cultures. But the distribution of topics does not necessarily have to be the same for other cultural groups as well. In addition, the reasons given for topic shifts can be culture dependent as well. In particular, silence seems to be a trigger for certain topic categories. However, the usage of silence in speech is dependent on cultural background. In the following, cultures are further explored and expectations about culture-related differences in topic selection are stated.

Trompenaars and Hampden-Turner [16], for example, divide cultures into Western, Latin and Oriental groups. Western cultures are described as verbal and members tend to get nervous when there are long pauses in communications. In contrast, in Oriental cultures (including Asian cultures), silence is considered as a sign of respect. While in Western cultures silence might be interpreted as failure to communicate, in Oriental cultures it is used as a means of conversation. In that manner pauses can be used to process information and assure that the conversation partner's turn is finished. This is in line with Hofstede's description of synthetic cultures [17]. Distinguishing individualistic and collectivistic cultures, the authors state that silence may occur in conversations without creating tension in collectivistic cultures, which does not hold true for individualistic cultures. Furthermore, the usage of pauses can be a crucial feature in collectivistic cultures. While most Western cultures belong to the individualistic group, most Asian cultures are on the collectivistic side.

According to these two theories, silence does not create tension in prototypical Asian conversations. Thus, is does not appear very likely that small talk conversations shift to personal topics in order to avoid silence, as described above for Western small talk conversations. But how are topics distributed in prototypical Asian conversations and where can we expect differences in comparison to prototypical Western conversations?

Hall [18] distinguishes cultures according to their relation to context. Regarding verbal communication, in so-called high-context communication little information is explicitly encoded and the conversation relies mainly on physical

context. Besides verbal utterances, meaning is transported through the situational context as well as other channels such as non-verbal clues or silence [19]. In contrast, low-context communication explicitly encodes information. In low-context communication meaning is expressed through explicit utterances. The speaker is expected to construct clear messages that can be understood easily without the need to decode other aspects of behavior such as silence or tone of voice. Regarding this dichotomy, a line can be drawn between Eastern and Western cultures. While most Western cultures are low-context cultures, most Asian cultures are high-context cultures. In [19], Ting-Toomey describes people belonging to high-context cultures as having a lower public self than people belonging to low-context cultures, which means that not too much personal information is revealed during a first-time meeting. Regarding small talk as a typical conversation for a first-time meeting in correlation with the categorization of topics described by Schneider [15], we expect topics covering the communication situation to be more common in low-context cultures than in high-context cultures and thus more common in German conversations than in Japanese ones.

Summing up our findings from the literature, the choice of topics in small talk is predictable and should vary across cultures. In principle, topics that cover the immediate, external or communicative situation commonly appear in casual small talk. Regarding culture-related differences, topics that are related to the personal background of the interlocutors should be more common in Western small talk conversations than in Asian ones.

However, tendencies described in the literature are rather broad and too abstract for integration into a multiagent system. In order to build a computational model for virtual characters, empirical data is needed that strengthens our expectations and describes them in a statistical manner for concrete cultures.

### 3.2 Example Conversations in Germany and Japan

As stated above, we expect small talk conversations to be more personal in Western cultures than in Asian ones. But how exactly would the choice of topics differ? To get a deeper insight into these questions, we analyzed the video corpus recorded in the German and Japanese cultures for the CUBE-G project [20]. Within the corpus, three prototypical interaction scenarios were videotaped: a first time meeting, a negotiation and a conversation with a person with a higher social status. In total, more than 40 students from a German and a Japanese university participated and around 20 hours of video material were collected. Students interacted with professional actors in order to ensure that all participnats meet the same conditions, have not met in advance and to ensure that all conversations last for approximately the same time. To allow all gender combinations, four actors were hired: one female and one male actor from both participating cultures. Dyads were held in each participant's mother tongue and thus Japanese students interacted with Japanese actors and German students with German actors. The first scenario (first time meeting) recorded the participants while getting acquainted with one another. For our analysis, we focused on this scenario since we were interested in casual small talk conversations.

In total, 21 German and 11 Japanese videos were annotated using the Anvil tool [21], including all gender combinations. Thus, all German first time meetings were taken into account for our analysis as well as half of the Japanese conversations since annotation is not finished for the whole Japanese corpus yet. For our recordings, actors were told to be as passive as possible, and to allow the student participant to lead the conversation. Only if communication stagnated, actors should get more active. In that manner we could assure that as many topics as possible were introduced by the participants and not by the actors. Following Schneider [15], we categorized the topics occurring in the conversations into immediate, external and communication situation (see section 3.1). Considering our experimental setting at a university campus with student participants, we chose to classify topics as follows:

- **Immediate situation:** Participants talk about the experimental setting, the task itself or reasons why they are participating in the study.
- **External situation:** The students talk about studies or the university in general (as a supersituation for recordings at a university), friends or other people they know or public topics such as music or movies.
- **Communication situation:** Interlocutors focus on topics concerning themselves, such as their places of origins, hobbies, going out at night, personal habits or even their health.

For our analysis, we build lists of frequency data holding the conversations with the occurrences of topic categories, and compared the two cultures of Germany and Japan, or the frequencies of topic categories within each culture respectively, using the two sided t-test.

Comparing the choice of topic categories within the small talk conversations across Germany and Japan, we found that topics covering the immediate and external situation occurred significantly more often in the Japanese conversations than in the German ones ($p = 0.014$ for immediate situation and $p = 0.036$ for external situation), while topics covering the communication situation occurred significantly more often in the German conversations ($p = 0.035$).

Having a look at the two cultures separately, we found that German subjects talked significantly more often about the external or communication situation compared to the immediate situation ($p = 0.001$ for immediate vs. external situation and $p = 0.002$ for immediate vs. communication situation). In the Japanese conversations, we found that participants discussed the external situation significantly more often than topics covering the immediate or communication situation ($p = 0.001$ for immediate vs. external situation and $p = 0.006$ for external vs. communication situation).

In addition, we calculated the average percentage distribution of topic categories in the German and Japanese cultures. This prototypical distribution is graphically shown in Figure 1. The findings from our corpus analysis are in line with tendencies extracted from the literature. As we stated earlier, we expected to find fewer topics covering the communication situation in Asian small talk conversations compared with Western ones. In addition, we found that topics


**Fig. 1.** Average distribution of topic categories during small talk conversations recorded in Germany and Japan

covering the immediate situation are more common in Japanese conversations and we gained a deeper insight in how topics were distributed in the conversations in our corpus for the two cultures.

## 4 Perception Studies

The main aim of our work is to investigate whether human observers prefer agent conversations that are in line with observations made for their own cultural background. To this end, we integrated our findings described above into a multiagent system holding virtual characters representing the two different cultural backgrounds and conducted evaluation studies in Germany and Japan. In the following subsections the integration into the scenario, the evaluation set-up as well as the results are presented.

### 4.1 Integration into a Virtual Scenario

In order to integrate the differences in small talk behavior described in section 3 into a multiagent system, we used the Virtual Beergarden application [22]. For the virtual scenario, culture-specific characters were modeled that match a prototypical Asian or Western ethnic background. Therefore, the characters' appearance such as skin, hair type or shape of the face had been adapted. Figure 2 shows the prototypical characters that were used in our evaluation study.

Regarding the verbal behavior of the characters, different voices such as German, English or Japanese can be used by the text-to-speech component. For non-verbal behavior, over 40 different animations can be performed by the characters, including gestures and body postures. An animation can either be typical for a cultural background, such as a bow for a Japanese greeting, or performed in a culture-specific manner by customizing its expressivity [23].

As described earlier, we found significantly more often topics covering the immediate and external situation in the Japanese conversations than in the German ones, while topics covering the communication situation occurred significantly more often in the German conversations. To simulate culture-related differences

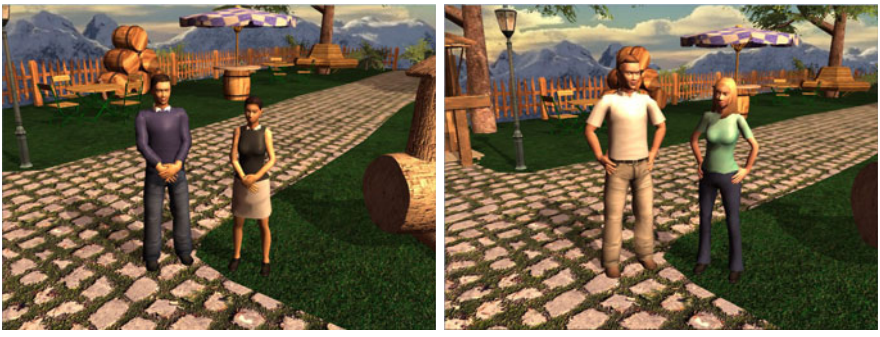

**Fig. 2.** Prototypical Asian (left) and Western (right) characters used in the evaluation studies

in small talk behavior, prototypical conversations were scripted, differing in the choice of topic categories. Using the prototypical distribution of topics presented in Figure 1, we equally integrated the immediate and external situation into the prototypical German small talk dialogs and all three categories into prototypical Japanese conversations, with an emphasis on the external situation. In that manner, we integrated two topics covering the external situation and two topics covering the communication situation in the German dialogs, and two topics covering the external situation and one topic covering the immediate and communication each in the Japanese dialogs, while all dialogs lasted for approximately one minute.

### 4.2 Study Setup

In order to find out whether participants from Germany and Japan prefer agent conversations that reflect a choice of topic categories that was observed for their own cultural background, we set up two versions of our evaluation study: to be conducted in Germany and Japan respectively. Therefore the authors agreed on 6 English dialogs, three of them containing a prototypical German topic distribution and three of them containing a prototypical Japanese topic distribution. These dialogs were then translated into the German and Japanese languages for the two evaluation studies in order to avoid effects due to the language barrier or culture-specific assumptions made for English speaking characters.

For the study conducted in Germany, the Western looking characters were used and for the study conducted in Japan, we used the Asian looking characters. In this vein, we assured that the participants did not assume a cultural background different from their own. In addition, we used language specific text-to-speech systems for the Western and Asian characters (German and Japanese). To avoid side effects evoked by gender, we chose a mixed gender combination for the agent conversations. That is, one female and one male character interacted with each other in both cultures.

Apart from the choice of topics, no other aspects of verbal behavior were taken into account (such as communication management). Regarding non-verbal behavior, characters remained in a body pose prototypical for their cultural background during the whole conversation (see Figure 2), since we already showed that the the execution of nonverbal behavior influences the perception of human observers positively [8]. Gestures were not exhibited by the characters to avoid preferences aroused by their matching to the semantics of the speech.

Since participants only saw the version of the study setup that was designed for their own cultural background, all participants met the same conditions in the two separate evaluation studies.

Before observing the agent videos, participants were told that the two characters have met each other for the first time and were introduced to each other by a common friend that left to get some drinks for everybody. In that manner, we created the assumption of a first time meeting including casual small talk, similar to the setup of our corpus study.

Participants watched the videos in pairs, each containing a prototypical German and a prototypical Japanese conversation in alternating order. For each pair of videos they had to judge

- (Q1) which one is more appropriate,
- (Q2) which one is more interesting,
- (Q3) which conversation they would prefer to join and
- (Q4) which pair of agents gets along with each other better,

while participants were able to either choose one of the videos or a button indicating that none of the two videos was preferred. In addition, a comment box was provided that allowed participants to state an opinion on their choice.

As stated earlier, we wanted to find out whether human observers prefer agent conversations that reflect their own cultural background. Thus, we expected participants in the German evaluation study to prefer dialogs that contain prototypical German topic categories, while we expected Japanese participants to prefer dialogs designed to reflect prototypical Japanese small talk behavior.

### 4.3 Results

In the German evaluation study, 16 participants took part, 6 female and 10 male, all in an age range of 23 to 40 years. Since all participants observed 3 pairs of videos, we obtained a data set containing 48 judgments. For our analysis we conducted a $chi^2$ goodness-of-fit test in order to validate our hypothesis that German participants prefer the videos showing German behavior over the Japanese versions. Our results indicate that German participants significantly prefer videos with agent conversations that reflect prototypical German topic selection for all four questions. Table 1 summarizes our results from the German evaluation study. Thus, participants found German conversations more appropriate and interesting, would rather like to join the conversations and think that agents get along with each other better.

**Table 1.** Results from the perception study conducted in Germany

| **Germany** | German dialog | Japanese dialog | none | $chi^2$ | df | p |
|---|---|---|---|---|---|---|
| Q1 | 33 | 5 | 10 | 27.875 | 2 | $< 0.001$ |
| Q2 | 37 | 4 | 7 | 41.625 | 2 | $< 0.001$ |
| Q3 | 34 | 4 | 10 | 31,5 | 2 | $< 0.001$ |
| Q4 | 28 | 7 | 13 | 14,625 | 2 | 0.001 |

**Table 2.** Results from the perception study conducted in Japan

| **Japan** | German dialog | Japanese dialog | none | $chi^2$ | df | p |
|---|---|---|---|---|---|---|
| Q1 | 11 | 22 | 9 | 7 | 2 | 0.03 |
| Q2 | 12 | 25 | 5 | 14.714 | 2 | 0.001 |
| Q3 | 11 | 21 | 10 | 5.286 | 2 | 0.071 |
| Q4 | 12 | 23 | 7 | 9.571 | 2 | 0.008 |

In line with our expectations, 5 out of 10 participants that explained their choice in the comment box stated that they preferred the selected conversation because it was more personal and revealed more information about the interlocutors.

In the Japanese evaluation study, 14 people participated, 7 female and 7 male in an age range of 21 to 23 years. We thus obtained a data set containing 42 judgments. As for the German study, we conducted a $chi^2$ goodness-of-fit test to find out whether Japanese participants would prefer the agent conversations that contain a prototypical Japanese topic selection over the German versions. Our analysis revealed that the Japanese versions of small talk conversations were significantly preferred by Japanese participants for 3 out of the 4 questions. In Table 2 the results from the Japanese evaluation study are summarized. According to our study, Japanese participants found the Japanese versions of small talk conversations more appropriate and interesting and thought that agents were getting along with each other better. Still this does not significantly indicate that participants would also rather like to join the Japanese conversations over the German ones.

Interestingly, and in line with our corpus study, some Japanese participants showed that the immediate situation was of importance for them. For example a Japanese video including to talk about the weather was judged positively by a participant because it "fit to the background image", while another participant disliked a conversation since "the content in the video does not match to the background image".

## 5 Conclusion

In this paper, we investigated culture-related differences in small talk behavior for the German and Japanese cultures for virtual characters. In the literature from the social sciences, three categories are defined that typically occur in

casual small talk: topics that cover the immediate, external or communication situation, while interlocutors usually shift to topics about the communication situation when they find themselves in situations where silence is tried to be avoided. However, the literature about cultures describes that silence does only create tension in certain cultural groups and is thus, not tried to be avoided in other cultures, such as Japan. This suggests that silence should not trigger a topic shift towards the communication situation as a consequence in these cultures. In addition, some cultural groups, including Japan, tend not to reveal much personal information in first-time meetings. This suggests too, that shifting to the communication situation is not very common in Japanese conversations compared to German ones. In a empirical corpus study, this tendency has been verified and prototypical distributions of the three topic categories have been extracted for the two target cultures. The findings from the corpus study are in line with our earlier results, where we analyzed only a small subset of the same corpus [5].

In two evaluation studies, we investigated whether participants from Germany and Japan prefer agent dialogs that reflect prototypical small talk conversations designed for their own cultural background. Therefore, the authors agreed on English dialogs that were translated into German and Japanese and integrated into a prototypical German and Japanese study setup. Participants from both cultures only saw the version that was designed to match their own culture, including the prototypical dialogs for both cultures. Both evaluation studies revealed that participants significantly preferred agent dialogs that had a prototypical topic distribution as conversations that were recorded in the target culture. In that manner, German participants preferred prototypical German dialogs for Wester-style characters and Japaneses participants preferred prototypical Japanese dialogs for Asian-style characters. This is in line with previous findings from our pilot study, where prototypical dialogs have been tested in only one culture [5].

Reflecting on our results, we thus claim that when integrating small talk into the dialog models of virtual characters in order to establish a social relationship, designers should take into account the cultural background of the user that a system is designed for. In that manner, the integration of different topics into the dialog models of virtual characters designed for different cultural backgrounds could enhance their acceptance on the user's side.

In the evaluation studies presented in this paper, the virtual characters' appearance was left constant during the experiment and matched the cultural background of the hunan participants. In that manner, we wanted to ensure that the participants did not estimate a cultural background of the virtual characters different from their own's. However using this design, it is not entirely clear whether participants prefer topic selection that was designed for their own culture or the culture that the virtual character appears to be. To get a deeper insight into this question, we plan on conducting the same study in both cultures again, but with virtual characters that resemble a different cultural background.

In addition, it might be interesting to experiment with different gender combinations, since gender differences within conversations are supposed to be perceived differently across cultures.

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